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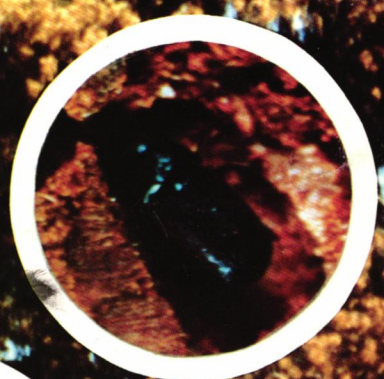
Bark Beetle Conditions in the Northern Region 1979



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BARK BEETLE CONDITIONS IN THE NORTHERN REGION 1979

by

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SUMMARY

Mountain pine beetle continued to deplete high-risk lodgepole, ponderosa, and whitebark pine stands on Federal, State, and private lands throughout Montana and northern Idaho in 1979. Epidemic infestations occur on the Beaverhead, Gallatin, Flathead, Lewis and Clark, Lolo, and Kootenai National Forests, and in Glacier and Yellowstone National Parks. New outbreaks developed in lodgepole pine stands on the Deerlodge and Helena National Forests, Blackfeet Indian Reservation in Montana, and Nezperce National Forest and Craig Mountain BLM lands, in Idaho. Mortality increased in second-growth ponderosa pine stands on the Crow Indian Reservation, but continued to decline in second-growth ponderosa pine stands on the Lewis and Clark National Forest, Montana.

Aerial surveys, completed in September 1979, revealed significant mortality of lodgepole, whitebark, ponderosa, and western white pine on more than 1.4 million acres in Montana and on 2,700 acres in lodgepole pine in north Idaho. Acreage figures represent area of visible faders (attacked trees), not area of infested green trees.

Even though extremely cold temperatures resulted in significant reduction of attacked trees in many locations, mortality increased in several outbreak areas. Greatest expansions occurred within and adjacent to Glacier and Yellowstone National Parks.

Western balsam bark beetle infestations increased significantly in subalpine fir stands on the Beaverhead, Gallatin, and Lolo National Forests, and Yellowstone National Park, but declined to endemic status in Idaho.

Pine engraver beetle populations declined in Montana and Idaho, but are predicted to increase in 1980.

Infestations of fir engraver beetle declined to endemic status on Federal lands, but persisted on State and private land on the West St. Joe State Forest, and Clearwater Potlatch Protective Association lands in Idaho.

MONTANA

BEAVERHEAD NATIONAL FOREST

Mountain Pine Beetle

More than 98,300 acres of lodgepole and whitebark pine are infested on the Madison Ranger District (RD), an increase of about 3,000 acres from 1978 (table 1).

The infested type contains about 13 trees/acre. Epidemic infestations increased from Nemesis Mountain west to Winslow Creek on National Forest, Bureau of Land Management, and private lands in Centennial Valley, and from Saddle Mountain to Cherry Creek in tributaries of the Madison River. Numerous mortality groups developed from Meadow Creek north to Strawberry Ridge in the Tobacco Root Mountains. Mortality increased in high elevation lodgepole and whitebark pine stands from Deadman Creek to Rainbow Lakes in the Madison Range. New activity was detected in Bear, Cameron, Tolman, Fall, and Spring Creek drainages. Several epicenters persist in susceptible stands in the Jack Creek drainage. Tree killing will continue to decline in Jack Creek but an increase is predicted elsewhere on the Madison RD in 1980. Approximately 4 MMBF of infested and susceptible green lodgepole pine are programed for logging in 1980.

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ROCKY MOUNTA ON

Western Balsam Bark Beetle

Infestations increased in subalpine fir stands from 1,415 acres in 1978 to 1,768 acres in 1979 (table 2). Group size ranged from 15- to 4,000-trees/area. On the Madison RD major infestations occurred in Price, Curry, Matsingale, Sheep Mountain, West Fork Ruby River, Cherry, West Fork Wigwam Creeks, Morgan Gulch, Meadow, South Fork Creek, and Potosi drainages. About 9,000 trees were mapped on 600 acres in Gary drainage, and two groups of 20 to 25 trees were mapped in Lacy Creek drainage, Wisdom RD.

BITTERROOT NATIONAL FOREST

Mountain Pine Beetle

Infestation declined from 3,391 acres in 1978 to 1,725 acres in 1979 (table 1). About 500 second-growth ponderosa pine were killed in White Cloud and Granite Creek drainages, with several 5- to 15-tree groups in Eight-Mile Creek, Stevensville RD.

Mortality declined in mixed lodgepole and ponderosa pine type on the north face of Shook Mountain, Sula RD, with about 450 trees being killed in three groups. Approximately 250 ponderosa pines were killed in the Cameron Creek drainage. Several 5- to 20-tree groups of lodgepole and ponderosa pine were mapped in Sheephead, Scimitar, Gabe, and Clearwater Creek drainages, West Fork RD. Activity declined in lodgepole pine stands near Dennis Mountain, Arrow, Dennis, and Hamilton Creeks drainages, and Salmon River Breaks Primitive Area.

DEERLODGE NATIONAL FOREST

Mountain Pine Beetle

New outbreaks developed on the Deerlodge NF (table 1). Several hundred lodgepole pine were killed in scattered groups in the Boulder Creek drainage, Jefferson RD. Widely scattered mortality from 2- to 120-trees/group occurred in Whiskey, Moose, and Halfway Creek drainages, Coyote Flat, and around Delmoe Lake, Butte RD. Mortality in whitebark pine stands declined from 6,100 acres to 425 acres on private lands at Devil's Fence, Hunting Gulch, and East Sand Creek near Elkhorn City.

FLATHEAD NATIONAL FOREST

Mountain Pine Beetle

The massive infestation on the Flathead National Forest expanded from 80,000 acres in 1978 to 121,300 acres in 1979 (table 1). Newly attacked trees averaged 13/acre. On the Glacier View RD, infestation occurred in all major drainages from Big Creek north to the Canadian border. Beetles have been infesting 100-200 acres of high-risk lodgepole pine type by emerging from infested logs decked at sawmills in Columbia Falls, and Olney, Montana. Thousands of whitebark pine were killed in high-elevation stands on 23,500 acres along the Whitefish divide. Scattered pockets of 2- to 70-beetle killed western white pine occurred in McGinnis, Depuy, and Canyon drainages. Significant increases in numbers of lodgepole pine killed were recorded on National Forest, but more so on the State and private lands on the Swan and Tally Lake RD's. Within the Tally Lake RD, groups of 2- to 70-beetle killed lodgepole pine occurred on mixed ownership near Lion and Ashley Lakes; 2- to 10-tree groups in Sheppard, Sanka, and Logan Creek drainages; and larger concentrations of up to 600 trees per epicenter in Meadow and Martin Creek drainages near Olney, Montana. New activity was mapped along the Stillwater River between upper Stillwater and Bull Lakes. Mortality of lodgepole, western white, and whitebark pine increased between Whitefish Lakes and Fitzsimmons Creek, Stillwater drainage.

About 600 lodgepole pine were sprayed with Sevimol-4® to protect them from beetle attack in the Tally Lake Campground, Tally Lake RD. Treatment of lodgepole pine in additional campgrounds is planned for 1980.

Lodgepole pine mortality increased on several hundred acres of mixed Federal, State, and private ownership, Swan Lake RD. Several 5- to 40-tree groups of faders occur throughout Mount Creek west to Mooks. Hundreds of lodgepole pine were killed in Dayton, Meadow, Tamarak, and Briggs drainages and from Hering Creek south to Hubbart Lake. Several thousand trees were attacked around McGregor Lake.

Western white pine mortality increased near Swan Lake, and declined on 1,200 acres around Hungry Horse Reservoir, Hungry Horse RD. About 150 lodgepole pine were killed in the South Fork drainage near Spotted Bear.

The potential for a serious epidemic exists on the Hungry Horse, Swan, Spotted Bear, and Tally Lake RD's. Outbreaks that develop from small localized "hot spots" will intensify and encompass entire stands within the next few years. This pattern has occurred in the North Fork Flathead River drainage and in the Thompson River drainage and on the south side of McGregor Lake.

Programed harvest for the 3-year period (1980-82) is 160 MMBF from green, high-risk lodgepole pine stands on the Tally Lake RD. An additional 22 MMBF will be salvaged from infested stands on 6,720 acres in Mt. Hefty, Tuchuck, and Thompson Seaton area during the next 5 years in the North Fork drainage, Glacier View RD.

Western Balsam Bark Beetle

Infestations receded from 2,045 acres in 1978 to 1,146 acres in 1979, Flathead NF (table 2). Ten- to 300-tree groups occur in Puzzle, Dodge, Granite, Twenty-Five Mile, and Skyland Creek drainages, Hungry Horse RD; and 50 trees were killed in the Fatty Creek drainage, Spotted Bear RD. Several 15- to 25-tree groups occur in Hay Creek, Glacier View RD, and Martin Creek drainage, Tally Lake RD.

GALLATIN NATIONAL FOREST

Mountain Pine Beetle

Despite cold temperatures (-63°F West Yellowstone, December 31, 1978), millions of lodgepole pine were killed on 441,000 acres on the Hebgen Lake, Bozeman-Gallatin, Livingston, and Gardiner RD's (table 1). Newly attacked trees average 18/acre. On the Hebgen Lake RD, acres of visible faders increased from 79,000 in 1978 to 103,700 in 1979. General areas of infestation were Black Bear Canyon on the south end of the District north to Teepee Creek. Activity intensified on the south side of Quake Lake and in Kirkwood and Beaver Creek drainages in the Madison Canyon. Tree mortality increased from Clark Spring south to Reas Pass.

Approximately 13,000 lodgepole pine were sprayed with Sevimol-4® to protect them from beetle attack in seven campgrounds and one administrative site (figure 1). Evaluation of one campground sprayed in 1978 but not sprayed in 1979 showed 99 percent protection the second year. Areas sprayed in 1979 will not be retreated in 1980.

Figure 1. Spraying high value lodgepole pine with Sevimol-4® to prevent mountain pine beetle attack, Hebgen Lake RD, Gallatin NF, Montana.

On the Bozeman-Gallatin RD, acres of visible faders increased from 165,600 in 1978 to 333,800 in 1979. Increased numbers of trees killed by beetle attack in 1978 were evident from Bozeman Pass west across the Gallatin Face throughout tributaries of the South Fork of Spanish Creek. Activity intensified throughout Hylite drainage south in the Gallatin Range to Snowflake Ridge. Tree mortality declined in some areas of the Gallatin Canyon where the epidemic began in 1969, but continued to increase not only from Squaw Creek south to Wilson Draw, but also in many drainages throughout the Spanish Peaks Primitive Area, as well as in tributaries of the West Fork Gallatin River south to Taylor Creek. Infestations are developing throughout drainages of the Bridger Mountains north of Bozeman, Montana. Infested groups ranged from 5- to 700-trees/group. Outbreaks developed in lodgepole pine stands on about 3,300 acres in Trail, Miner, Eight-Mile, Lewis, Bear, and Rock Creek drainages west of the Yellowstone River, and new tree mortality was detected in Dry, Little Bear, Pine, Elbow, Big Creek, and in the Boulder River drainage east of the Yellowstone River, Livingston RD.

Infested groups of 5- to 100-trees/group were observed for the first time on 381 acres in Tom Miner, Mill, and Mal Heron drainages, Gardiner RD.

Tree mortality will decline in portions of the Gallatin Canyon due to a reduction of suitable hosts. However, an increase is predicted in high-risk lodgepole pine type on most Districts in 1980. Accelerated logging of 24 MMBF of lodgepole pine is planned for 1980.

Douglas-Fir Beetle

Infestation increased from 10 acres in 1978 to 671 acres in 1979 in mature and overmature Douglas-fir stands in Blacktail, Trapper, and Deer Creek drainages, Big Timber RD.

Western Balsam Bark Beetle

Mortality in subalpine fir was mapped on 30 acres in 1978 compared to 3,647 acres in 1979 (table 2). A significant increase in number of trees killed and acreage infested occurred in Taylor, Sage, Bacon Rind, Migration, and Snowslide Creek drainages, Bozeman-Gallatin RD; and Cabin Creek drainage, Hebgen Lake RD. New infestations ranging from 10- to 200-trees/group were detected in Bill Smith, North and South Fork Creek drainages in the Bridger Mountains. Several new infestations developed near Four-Mile Guard Station, Big Timber RD.

HELENA NATIONAL FOREST

Mountain Pine Beetle

Less than 1,000 lodgepole pine were killed on 725 acres in Sulphur Bar and Black Butte Gulch, Townsend RD. About 1,000 whitebark pine were killed on 870 acres along Swan Creek, Hog Hollow, and Dahlman Gulch (table 1). New infestation was mapped in lodgepole pine type in Crow and Cayuse Creek drainages and Bullock Hill. These infestations will remain static in 1980. Several small groups of ponderosa pine were killed in Stonewall, Park, Willow, and Poorman drainages; and lodgepole pine mortality was mapped in several 6- to 50-tree groups in Wasson and Hogum drainages, Lincoln RD.

Western Balsam Bark Beetle

Infestations in subalpine fir stands declined from 1,680 acres in 1978 to 15 acres in 1979 (table 2). Mortality of 10- to 200-tree groups occurred in Butte, Hound, Mule, and Garder Creek drainages, Canyon Ferry RD. A continued decline is predicted for 1980, provided dry conditions in 1979 did not predispose trees to beetle attack.

KOOTENAI NATIONAL FOREST

Mountain Pine Beetle

Epidemic infestations occur on more than 48,600 acres of lodgepole pine type and about 600 acres of ponderosa pine type (table 1). Increased tree mortality was evident in all areas, particularly in the Yaak River drainage in 1978. Infested area increased from 19,820 acres in 1978 to 32,950 in 1979. Although tree mortality declined 50 percent from 1978 to 1979, there are still 11 infested trees/acre. Intensive new attacks of up to 55 trees/acre occurred in Pete, Hensley, Slim, Waper, Benefield, Caribou, Basin, Porcupine, Blacktail, Solo Joe, Hudson, Windy, Turner, and Yodlin Creek drainages, and around Hoskin Lakes.

Acres infested doubled in lodgepole pine type from 1978 to 1979 on the Fisher River RD. Mortality centers ranging from 2- to 600-trees/group are distributed throughout the District. "Hot spots" developed on mixed ownership from McGregor Lake west to East Fisher River, and in Barnum, Pleasant Valley, McKillop, Snell, Fawn, Cody, Tamarak, Coniff, Buck, Johnson, Dunn, Snag Gulch, Redemption Ridge, Canyon, Kelrop, Sheppard, Brush, and upper Wolf Creek drainages. New outbreaks are predicted to develop in high-risk lodgepole pine stands throughout the District. About 400 ponderosa pine were killed in Pleasant Valley, Brush Creek, North Fork of Canyon, and Cripple Creek drainages in 1979.

Small "hot spots" developed in lodgepole pine stands in Parsnip, Big, Little North Fork, Boulder, Simons, Young, Pinkam, Lion, and Cadette drainages; and in Holup Gulch, Rexford RD. Mortality intensified in the Gold Creek area; and new activity developed in Water, Sunday, Louis, Blessed, Paul, and Harvey Creek drainages. Scattered group kills occurred in upper Sinclair Creek.

Acreage of infested lodgepole pine type nearly tripled from 590 acres in 1978 to 1,700 acres on the Libby RD in 1979. Infestation will intensify in Fisher, Schrieber, Reihnart Gulch, Cowey, Hoodoo, Libby, and Elliot drainages in 1980.

Throughout the Kootenai NF, the epidemic is predicted to increase in 1980.

The Kootenai NF has shifted the majority of cutting to high-risk uninfested lodgepole pine stands. Approximately 28 MMBF is planned for removal from the Rexford, Fisher River, and Yaak RD's in 1980.

LEWIS AND CLARK NATIONAL FOREST

Mountain Pine Beetle

Infestation in second-growth ponderosa pine type declined from 34,400 in 1978 to 15,000 acres in 1979 on National Forest, Bureau of Land Management, State, and private lands (table 1). Newly attacked trees average 1/acre.

On the Judith RD, infestation increased from 1,600 acres in 1978 to 4,200 in 1979. Largest pockets of attacked trees occurred in the South and Middle Forks of the Judith River and Yogo Creek drainages, and on the northeast side of Woodhurst Mountain. New infestations were detected in Dry Wolf, Dry Gulch, upper Willow, Lick, and Logging Creek drainages.

Ponderosa pine faders were mapped in Pasture Gulch, Spotted Creek, West Fork Hopley Creek, and Clark Fork drainages.

New outbreaks developed in lodgepole pine stands on 200 acres in Rattle, Warm Springs, Boulder Creek, and Smith Fork drainages, and at Castle Lake, White Sulphur Springs RD.

Infestation occurred in second-growth ponderosa pine on several thousand acres of BLM and private land in Willow, Flat Willow, Porter, McCartney, Canyon, Beaver, and Rock Creek drainages south of Lewistown, Montana (table 3). Scattered groups of lodgepole pine faders were observed in Green Pole Canyon south of Lewistown, Montana. Several thousand acres of additional infestation occur in second-growth ponderosa pine stands in Madin, New Year Gulch, Ruby, Warm Springs, and Blind Creek drainages in the Judith and South Moccasin Mountains north of Lewistown, Montana. Below normal rainfall in 1979 may predispose ponderosa pine to beetle attack in 1980.

Western Balsam Bark Beetle

Infestation in subalpine fir type declined from 500 acres in 1978 to 100 acres in 1979. Active infestation persists in stands at Kings Hill, Barnaboo, and Mizpah drainages, White Sulphur Springs RD (table 2).

LOLO NATIONAL FOREST

Mountain Pine Beetle

Infestations were mapped on 14,000 acres in 1979 compared to 16,000 acres in 1978 in lodgepole pine and ponderosa pine stands. Faders were observed in mixed stands on an additional 13,600 acres on adjacent State and private lands (tables 1 and 3).

Acreage infested receded slightly in the Thompson River drainage, Plains RD. Extensive tree killing occured on 5,500 acres in Meadow, Lazier, Whitney, Fishtrap, Cool, and Mantrap drainages. Scattered mortality of 5- to 1,000-trees/group occurred on mixed ownership from Murr Creek south throughout the Thompson River State Forest to Buffalo Bill Creek.

Infested trees average 27/acre. Salvage logging appears to have reduced activity in some locations; however, the potential for increase still exists in high-risk stands. About 2 MMBF will be salvage logged from infested and green, high-risk stands in the Thompson River drainage, Plains RD, in 1980.

Infestation increased from 288 acres in 1978 to 450 acres in 1979 in lodgepole pine stands in Fishtrap, Young, Lulu Gulch, and Shale Creek drainages, Thompson Falls RD.

On the Superior RD, several hundred lodgepole and ponderosa pine were killed between Sloway Gulch and Dunns Creek along the Clark Fork River near St. Regis, Montana. Mortality centers ranged from 2- to 300-trees/group.

The area with ponderosa pine faders increased from 740 acres in 1978 to 958 acres in 1979 on the Missoula RD. Several groups of 1- to 20-trees are widely scattered up Rock Creek and along the Clark Fork River to Tree Hill east of Missoula. About 500 trees were killed in small groups on mixed ownership in Butler Creek drainage; Blue Mountain; Sawmill and Martin Gulch; and Mill, Edith, Quartz, and Trout Creek drainages.

New outbreaks developed in lodgepole pine stands on the Seeley Lake RD with small group kills in Colt and Richmond drainages, and near Rainey, Alva, and Placid Lakes, and Blind Canyon. Several hundred ponderosa pine were infested near Upsata and Elbow Lakes, Black Canyon, and scattered along the Blackfoot River between Jamison Gulch and Kleinschmidt Flat.

Extensive mortality of second-growth ponderosa pine occurred on 10,500 acres of Bureau of Land Management and private ownership from Dunigan Mountain west to Diamond Mountain on the south side of the Blackfoot River (table 3). Additional infestation is building near Kinney's Ridge and in the Gold Creek drainage. These infestations are expanding and an increase in tree mortality is predicted in 1980.

Western Balsam Bark Beetle

In 1979, new infestations in subalpine fir stands ranging from 10- to 300-trees/group were mapped on 1,281 acres in Grizzly Basin, Lodgepole, and in the North Fork Blackfoot River drainages, Seeley Lake RD (table 2).

Douglas-fir Beetle

Douglas-fir faders were mapped on 40 acres in Cayuse, Two, and Cedar Creek drainages, Superior RD; and small 5- to 15-tree groups occurred in Gold Creek drainage, Missoula RD.

OTHER FEDERAL, STATE, AND PRIVATE LAND - MONTANA

GLACIER NATIONAL PARK

Mountain Pine Beetle

The massive infestation expanded, even though cold temperatures caused a decline in brood survival. Newly attacked trees averaged about 52/acre. Infested lodgepole and whitebark pine stands increased from 164,000 acres in 1978 to more than 215,000 in 1979 (table 1). Beetles have infested more than 206,000 acres of lodgepole pine and more than 9,000 acres of whitebark pine stands since the early 1970's.

Millions of lodgepole pine have been killed from Upper Kintla Lake and the Canadian border south to Snyder Ridge near McDonald Lake and Park Headquarters on the west side of the Park (figure 2). In 1979, tree mortality was mapped for the first time on the east side of the Park (figure 3) in Kootenai, Waterton, and Boundary Creek drainages. There is extensive tree mortality at Waterton Lake. Thousands of trees were infested in the Mokowanis and Belly River drainages north to the Canadian border. New activity occurred in stands around St. Mary, Sherburne, and Swift Current Lakes. Tree mortality increased at the south end of Apgar Mountain, and intensified in Park, Coal, Pinchot, Harrison, Lincoln, and Walton Creeks, and along the Middle Fork Flathead River

Figure 2. Mountain pine beetle infestation west side Glacier National Park, 1979.

Figure 3. Mountain pine beetle infestation east side Glacier National Park, 1979.

drainage between West Glacier and Walton Ranger Station. In 1980, infestations will intensify in stands on the east and in many areas on the west sides of the Park as well as in the Middle Fork Flathead River drainage.

Beetle populations are so intense that the frequency of Engelmann spruce being successfully attacked and killed by mountain pine beetle has increased since 1977.

STATE FORESTS

Mountain Pine Beetle

Infestation in lodgepole pine stands remained static from 1978 to 1979 on 1,300 acres in the Stillwater State Forest (table 3). New activity was mapped in high-risk stands on 255 acres in the Swan River State Forest. The large epidemic in the Thompson River State Forest declined five-fold due to extensive logging of infested and green, high-risk stands.

Douglas-Fir Beetle

Infestations declined to endemic levels on the Flathead and Rocky Boy Indian Reservations, and in the Stillwater State Forest, Montana (table 3).

Pine Engraver Beetle

The area infested declined from 11,665 in 1978 to 20 acres in 1979 (table 3). Drought conditions in 1979 may predispose ponderosa pine in overstocked stagnated stands to beetle attack resulting in an increase in tree killing and acreage infested in 1980.

Populations of the Douglas-fir engraver beetle declined to endemic levels in 1979 (table 3).

YELLOWSTONE NATIONAL PARK

Mountain Pine Beetle

Mortality in lodgepole and whitebark pine stands increased by a factor of 2.5 from 171,200 acres in 1978 to 421,100 acres in 1979 (table 1). A marked increase in the number of faders was evident from Divide Lake and Crowfoot Pass south to Bechler River, east to Snake River at the south end of the Park. Infestation spread eastward to Ferris Fork, Craig Pass, Cowan Creek, Gibbon Hill, Grizzly Lake, and Crowfoot Ridge.

Beetles reinfested stands and killed thousands of trees in the southern portion of the Park that had been infested from 1966 through 1977. Faders were mapped in 1977 from Old Faithful south to the Targhee National Forest boundary. This area was reinfested in 1978, and tree mortality is predicted to increase in 1980.

Western Balsam Bark Beetle

Acreage with subalpine fir mortality increased from 712 in 1978 to 1,250 in 1979, with major infestation centers in Middle Basin and Crowfoot Ridge. Group size ranged from 10- to 500-trees/group. Approximately the same number of trees could be killed in 1980 (table 2).

CROW INDIAN RESERVATION

Mountain Pine Beetle

Activity declined in second-growth ponderosa pine stands from 7,100 acres in 1978 to 1,940 in 1979 (table 3). However, newly attacked trees increased to an average 39/acre with concentrated groups of faders occurring in Corral, Cache, Little Corral, and Spring Creek drainages in the Wolf Mountains. Isolated groups of faders occurred in North Fork of Indian Creek, Steve Canyon, Little Thompson, and Thompson drainages. Salvage logging removed 1.5 MMBF from 500 acres in 1979. Additional sales are planned for 1980. Tree mortality will continue in unmanaged, overstocked, decadent stands.

FT. BELKNAP INDIAN RESERVATION

Mountain Pine Beetle

Area of infestation declined in second-growth ponderosa pine stands from 995 acres in 1978 to 592 acres in 1979 (table 3). Two- to 350-tree groups occurred in Beaver Creek drainage, with 5- to 30-tree groups around Spring Butte and Lodge Creek drainage. Widely scattered tree killing was mapped between Landusky and Spring Campground. Infestation is predicted to remain static in 1980.

BLACKFEET INDIAN RESERVATION

Mountain Pine Beetle

New outbreaks developed in lodgepole pine stands on 200 acres in Lee, Sandy Ridge, Chief Mountain, Boulder, and Swift Current drainages (table 3). Newly attacked trees averaged 18/acre. In-place, population buildup, coupled with beetle migration from Glacier National Park, will result in a significant increase in tree mortality in 1980. Surveys to delineate and cut high-risk stands are planned in 1980.

ROCKY BOY INDIAN RESERVATION

Mountain pine beetle infestation declined from 150 acres in 1978 to 15 acres in 1979 (table 3). Small widely scattered 1- to 10-tree groups were mapped in Sandy and Muddy Creek drainages and between Butte and Continental Lookout. A continued decline is predicted in 1980.

IDAHO

NEZPERCE NATIONAL FOREST

Douglas-Fir Beetle

Infestation increased on 1,060 acres on the Selway RD, with mortality of up to 100 trees/group from Meadow Creek northwest to Swift Water Creek along the Selway Face. A new outbreak developed on 100 acres in Pine, Clear, Solo, and Middle Fork of Clear Creek drainages, Clearwater RD; and on 100 acres in the South Fork Clearwater River drainage between Little Campbell and Hungry Ridge, Elk City RD. Groups of 2- to 20-trees/group were mapped in the Slate Cabin, Cow, and Fiddle Creek drainages, Slate Creek RD. Mortality was mapped on 25 acres in Elk Creek, Red River RD.

CLEARWATER NATIONAL FOREST

Douglas-fir Beetle

Widely scattered groups of faders occurred in mature and overmature Douglas-fir stands, Lochsa RD. Group kills ranging from 1- to 40-trees/ group occurred in Wilson, Rye Patch, Apgar, Glade, Deadman, Six Bit, and Dollar Creek drainages.

Mountain Pine Beetle

Mortality in lodgepole pine was mapped on 250 acres in Newsome, Sing Lee, Moose, Redwood, and Big Campbell drainages, Elk City RD (table 1). New infestation developed on 50 acres in the Red River and Mallard drainages, Red River RD. Less than one tree/acre was killed in 1979. Mortality is predicted to increase in high-risk stands in 1980.

STATE AND PRIVATE LANDS

Fir Engraver Beetle

Small groups of infested grand fir, were mapped in widely scattered locations on the St. Maries RD, and associated State and private lands (table 4). Infested areas declined from 4,735 acres in 1978 to 860 acres in 1979 on State and private ownership, and from 2,034 acres to endemic levels on National Forests in north Idaho (table 4). Active infestation still persists in pole-size to mature grand fir stands with 750 acres of infestation on the West St. Joe State Forest, 100 acres on Clearwater Potlatch Protective Association lands, and 10 acres of BLM lands in the Craig Mountains

(table 4). Mortality occurred mainly in pole- to mature-size grand fir and was associated with root disease centers. Mortality may increase in 1980.

Pine Engraver Beetle

Infestations in second-growth ponderosa pine declined from 3,363 acres in 1978 to 910 acres in 1979 (table 4). Active infestation persists on 750 acres on the Pend Oreille State Forest; 100 acres, West St. Joe State Forest; and 50 acres, Kendrick State Forest. Increased tree mortality is predicted in 1980 due to drought conditions in 1979.

CRAIG MOUNTAINS - BUREAU OF LAND MANAGEMENT

Mountain Pine Beetle

Faders were mapped on 1,750 acres, a decline of 770 acres from 1978, in lodgepole pine type in Swamp, Sweetwater, Webb, Mission, and Fourth Creek drainages (table 4). Newly attacked trees averaged 17/acre. Logging infested and high-risk stands reduced current infestation level and potential for future epidemics. A continued decline is predicted in 1980.

Douglas-fir Beetle

Infestation developed on 35 acres on BLM lands in the Craig Mountains south of Lewiston, Idaho (table 4).

Other Bark Beetles

Infestation by pine engraver beetle, fir engraver beetle, and western pine beetle declined in 1979. Pine engraver beetle infestation was mapped on less than 10 acres in Mission Creek, McCormick Ridge, Grouse Ridge, Basin Creek, Bingman Ridge, and Wood Creek drainages (table 4).

Fir engraver beetle infestation was active on less than 100 acres in Mission, Swamp, Eagle, Webb, Sweetwater, and Mahoney drainages (table 4).

Table 1.--Acres of mountain pine beetle infestation in the Northern Region in 1978 and 1979

	1978			1979			Net Change		
	Lodgepole pine	Ponderosa pine	Whitebark pine	Lodgepole pine	Ponderosa pine	Whitebark pine	Lodgepole pine	Ponderosa pine	Whitebark pine
Beaverhead	62,072	0	5,303	95,102	0	3,231	+33,030	0	-2,072
Bitterroot	499	2,892	0	649	1,076	0	+150	-1,816	0
Custer	0	0	0	1	77	0	+1	+77	0
Deerlodge	32	0	6,118	245	0	180	+213	0	-5,938
Flathead	78,561	1,291	150	97,237	386	23,708	+18,676	-905	+23,558
Gallatin	244,699	0	0	441,252	0	225	+196,553	0	+225
Helena	737	200	453	1,065	428	895	+328	+228	+442
Kootenai	26,535	130	0	48,599	615	0	+22,064	+485	0
Lewis & Clark	0	34,244	0	30	15,010	361	+30	-19,234	361
Idaho Panhandle	0	550	0	0	0	0	0	-550	0
Lolo	11,059	4,719	50	9,020	4,852	10	-2,039	+133	-40
Nezperce	800	0	0	300	0	0	-500	0	0
Glacier NP	164,017	0	0	206,115	0	8,912	+42,098	0	+8,912
Yellowstone NP	171,244	0	0	431,114	0	0	259,870	0	0
Other ownership[1/]	20,889	20,982	25	5,767	21,835	494	-15,122	+853	+469
TOTAL	781,144	65,008	12,099	1,336,496	44,279	38,016			

1/ Indian Reservations, BLM, and State forests

Table 2.--Subalpine fir mortality caused by western balsam bark beetle, 1977-1979, Montana

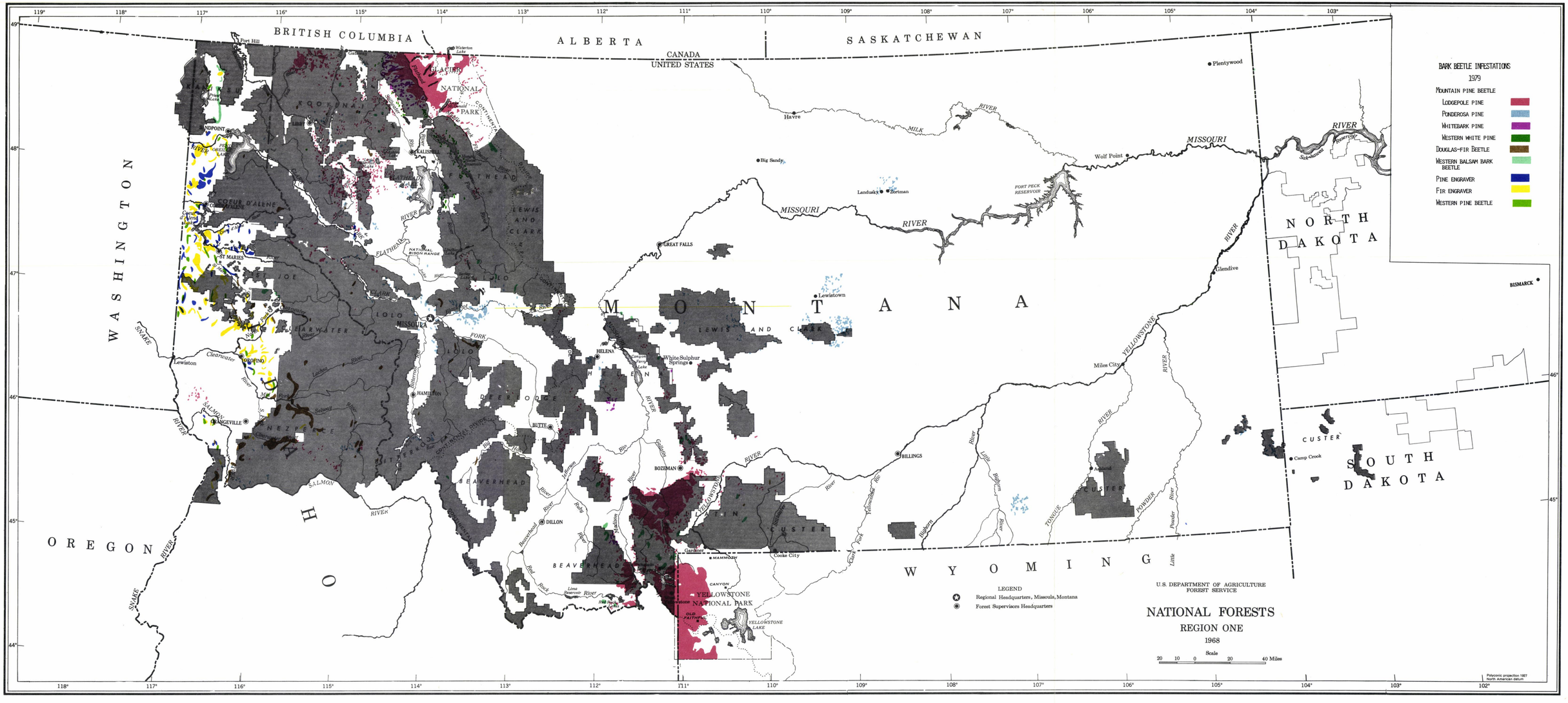
National Forest	Area	Trees killed/acre			Volume killed/acre (board feet)			Predicted trend
		1977	1978	1979	1977	1978	1979	
Lolo	Grizzly Basin	43.3	65.9	15.5	4,709	1,764	1,431	Epidemic decreasing
	Lodgepole Ck.	18.7	40.7	5.5	3,600	4,813	275	Epidemic decreasing
Beaverhead	Lakeview	82.6	121.2	0	4,742	7,330	0	Endemic
	Tipton Ck. #1	64.9	81.8	0	1,966	1,623	0	Endemic
	Tipton Ck. #2	47.0	80.9	0	3,909	3,260	0	Endemic
	Aytol Lakes	47.1	103.0	96.6	158	1,216	1,511	Epidemic stats
	Morton Ranch #1	3.2	13.4	2.4	--	874	144	Epidemic decreasing
	Morton Ranch #2	5.1	6.3	24.5	229	224	747	Epidemic increasing
	Lakeview	82.6	121.1	0	4,742	7,330	0	Endemic
Gallatin	Snowslide	22.2	57.9	8.9	1,230	1,453	--	Epidemic decreasing
	Black Butte	28.6	136.1	7.0	616	2,530	110	Epidemic decreasing

Table 3.--Acres infested by bark beetles on other Federal, State, and private lands in Montana, 1978-1979

Area	Mountain pine beetle		Douglas-fir beetle		Pine engraver beetle		Fir engraver beetle		Western pine beetle	
	1978	1979	1978	1979	1978	1979	1978	1979	1978	1979
Flathead IR	180	150		5	11,540	20				5
Blackfeet IR		200								
Crow IR	7,155	1,940								
Rocky Boy IR	150	15	10	1						
Ft. Belknap IR	995	592								
Stillwater SF	1,138	1,372	75				1,902			
Swan River SF		255					132			
Thompson R. SF	17,921	3,174			50					
Garnet BLM	9,600	10,527			75					
Judith BLM	2,338	8,611								
TOTAL	39,477	37,093	85	6	11,665	20	2,034			5

Table 4.--Acres infested by bark beetles on other Federal, State, and private lands in Idaho, 1978-1979

Area	Mountain pine beetle		Douglas-fir beetle		Pine engraver beetle		Fir engraver beetle		Western pine beetle	
	1978	1979	1978	1979	1978	1979	1978	1979	1978	1979
Pend Oreille SF					1,000	750				
W. St. Joe SF					1,000	100	750	750		
Kendrick SF						50				
Clearwater Potlatch Protective Assn.					238		3,035	100		
Mica SF					1,125		250			
Craig Mt. BLM	2,520	1,750		35		10	700	10		10
TOTAL	2,520	1,750		35	3,363	910	4,735	860		10


BARK BEETLE INFESTATIONS
1979
MOUNTAIN PINE BEETLE
LODGEPOLE PINE
PONDEROSA PINE
WHITEBARK PINE
WESTERN WHITE PINE
DOUGLAS-FIR BEETLE
WESTERN BALSAM BARK BEETLE
PINE ENGRAVER
FIR ENGRAVER
WESTERN PINE BEETLE
BRITISH COLUMBIA
ALBERTA
SASKATCHEWAN
CANADA
UNITED STATES
WASHINGTON
OREGON
IDAHO
MONTANA
NORTH DAKOTA
SOUTH DAKOTA
WYOMING
GLACIER NATIONAL PARK
YELLOWSTONE NATIONAL PARK
FLATHEAD
KOOTENAI
COEUR D'ALENE
ST. JOE
CLEARWATER
NEZ PERCE
LOLO
BITTERROOT
SALMON RIVER
SELWAY
LOCHSA
CLEARWATER
BOISE
PAYETTE
WEISER
CRAIG MOUNTAIN
SNAKE RIVER
HELLS CANYON
DEERLODGE
BEAVERHEAD
LEWIS AND CLARK
CUSTER
GALLATIN
GRAVELLY RANGE
MADISON RANGE
ABSAROKA
BEARTOOTH
BIGHORN
CROW
NORTHERN CHEYENNE
FORT PECK RESERVOIR
NATIONAL BISON RANGE
OLD FAITHFUL
YELLOWSTONE LAKE
CANYON
MAMMOTH
Port Hill
Wolverton
Lake
Gateway
Plentywood
Havre
Big Sandy
Landusky
Zortman
Wolf Point
Glendive
Lewistown
GREAT FALLS
HELENA
White Sulphur Springs
Miles City
BISMARCK
Bismarck
Camp Crook
Custer
BILLINGS
BOZEMAN
BUTTE
DILLON
Gardiner
Cooke City
Livingston
Missoula
Kalispell
Coeur d'Alene
St. Maries
Grangeville
Lewiston
Cleerwater
Orofino
Hamilton
Deer Lodge
Big Timber
Red Lodge
Columbia Falls
Polson
Libby
Troy
Bonners Ferry
Priest River
Sandpoint
Newport
Plummer
Moscow
Pullman
Garfield
Colfax
Dayton
Walla Walla
Enterprise
Joseph
Baker
Ontario
Nyssa
Vale
Burns
Prineville
Redmond
Madras
Condon
Fossil
Heppner
Pendleton
Hermiston
Arlington
The Dalles
Hood River
Parkdale
Government Camp
Estacada
Sandy
Portland
Vancouver
Longview
Kelso
Chehalis
Centralia
Olympia
Shelton
Aberdeen
Hoquiam
Raymond
South Bend
Long Beach
Ilwaco
Cathlamet
Kalama
Castle Rock
Woodland
Yacolt
Battle Ground
Vancouver
Camas
Washougal
Stevenson
Carson
White Salmon
Bingen
Goldendale
Klickitat
Lyle
Dallesport
Roosevelt
Maryhill
Wishram
Dallesport
Columbia River
Snake River
Clearwater River
Salmon River
Selway River
Lochsa River
Bitterroot River
Flathead River
Kootenai River
Clark Fork River
Missouri River
Yellowstone River
Milk River
Powder River
Tongue River
Little Bighorn River
Big Horn River
Gallatin River
Madison River
Jefferson River
Beaverhead River
Ruby River
Red Rock River
Lima Reservoir
Hebgen Lake
Earthquake Lake
Quake Lake
Hungry Horse Reservoir
Flathead Lake
Pend Oreille Lake
Coeur d'Alene Lake
Priest Lake
Lake Pend Oreille
Dworshak Reservoir
Lake Roosevelt
Grand Coulee Dam
Banks Lake
Moses Lake
Potholes Reservoir
Lake Chelan
Lake Wenatchee
Stevens Pass
Snoqualmie Pass
Cascade Tunnel
Columbia Gorge
Mount Rainier
Mount Adams
Mount St. Helens
Mount Hood
Mount Jefferson
Three Sisters
Crater Lake
Klamath Falls
Lakeview
Alturas
Modoc Plateau
Warner Mountains
Steens Mountain
Owyhee Reservoir
Malheur Lake
Harney Lake
Silvies River
Crooked River
Deschutes River
John Day River
Umatilla River
Grande Ronde River
Wallowa Lake
Wallowa Mountains
Eagle Cap Wilderness
Hells Canyon
Seven Devils
Salmon River Mountains
Sawtooth Mountains
Sawtooth Wilderness
Stanley Basin
Boise River
Payette River
Weiser River
Owyhee River
Bruneau River
Jarbidge Mountains
Jarbidge Wilderness
Nevada
Utah
Idaho
Montana
Wyoming
Oregon
Washington
LEGEND
Regional Headquarters, Missoula, Montana
Forest Supervisors Headquarters
U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
NATIONAL FORESTS
REGION ONE
1968
Scale
20 10 0 20 40 Miles
Polyconic projection 1927
North American datum

Bark Beetle Conditions

in the Northern Region

1979

State and Private
Forestry